भारतीय मानक

Indian Standard

IS 17645 : 2021

वेब ऑफसेट मशीनों के लिए स्वीकार्य परीक्षण एवं खरीद निष्पादन संहिता

Code of Acceptance Tests and Purchase Performance for Web Offset Machines

ICS 37.100.10

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भारतीय मानक ब्यूरो
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Printing Machinery Sectional Committee, MED 25

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Printing Machinery Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard defines the various types of waste that are generated in web offset machines. It also specifies the test requirements, acceptance test criteria and purchase performance for offset machines. The parameters for 'saleable copy quality' has also been included in this standard.

The composition of the Committee responsible for the formulation of the standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CODE OF ACCEPTANCE TESTS AND PURCHASE PERFORMANCE FOR WEB OFFSET MACHINES

1 SCOPE

This standard covers the requirements of the acceptance test and purchase performance for newspaper web offset machine.

2 DEFINITIONS

2.1 Definition of Waste According to the Saleable Quality

All printed copies which are press-related outside the defined tolerances of the criteria described as "saleable quality" are recorded as waste.

The "saleable quality" varies according to a quality accepted by the customer however it does not conform to the optimum product quality which can be produced by the installed product described here.

2.2 Definition of Start-up Waste

Those copies which occur between the first completely printed copy in the folder delivery up to the first saleable copy are treated as "Start-up waste".

2.3 Definition of Production Run Waste

Those copies, which generate additional copies outside the defined tolerance ranges after the first saleable copy (net counter switched on) during the current production run is described as production run waste. This includes copies which are press-related. The production run waste counter stops when "saleability" (net counter switched on again) has been obtained.

2.4 Definition of White Waste

2.4.1 *Webbing-up Waste*

Webbing-up waste is the amount of web required between the reel stand/splicer and the first folded product in the delivery. It is specified by the longest web path in the press.

2.4.2 *Start-up White Waste*

Start-up white waste includes all copies from the start-up of the press to the first completely printed copy in the folder delivery.

2.5 Definition of Paste-Up Waste

Paste-up waste includes all copies which are caused by a reel change and are outside the defined "saleable quality" tolerances. This includes the reel paste itself which runs through the press as well as all copies which exhibit tolerance deviations caused by this paste in the cut-off compensator, colour register and ink feed until the "saleable quality" defined in the following is obtained again.

2.6 Definition of Delivery Waste

Delivery waste is the number of cylinder revolutions which occur between the last saleable copy and the final press stop.

2.7 Definition of Packaging Waste

This includes cover and jacket packaging material, the reel core and the first layers removed from a reel. This is not press-related and is to be determined by weighing only.

2.8 Diagram of Waste

Process diagram of waste is shown in Fig. 1

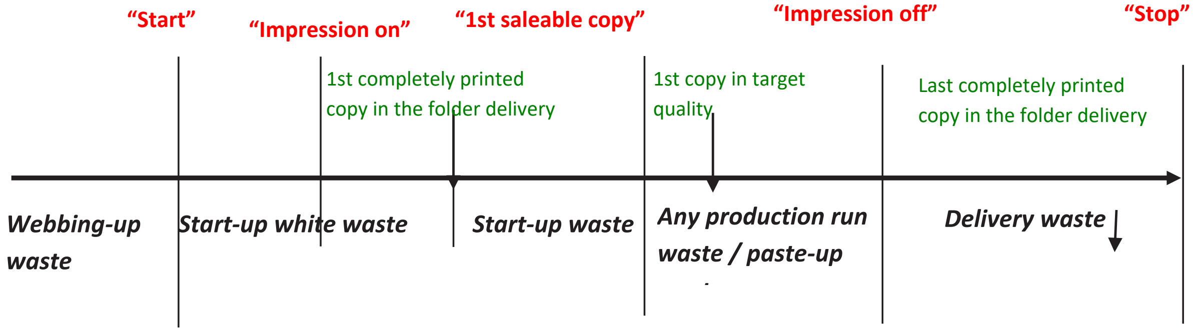
"Start"
"Impression on"
"1st saleable copy"
"Impression off"
"Stop"
1st completely printed copy in the folder delivery
1st copy in target quality
Last completely printed copy in the folder delivery
Webbing-up waste
Start-up white waste
Start-up waste
Any production run waste / paste-up
Delivery waste

FIG. 1 PROCESS DIAGRAM OF WASTE

2.9 Test Requirements of the Press

General requirements from the press for the acceptance tests are

a) Well maintained and adjusted press as well as trained personnel with consistent operating method according to training;

b) There must be an adequate number of technically experienced printers who can immediately make any required corrections and adjustments following start-up of the press without disregarding relevant amounts of waste;

c) Central control consoles with required centralised access;

d) Proofing speed is between 6000 and 8000 cyl. revs/h according to press type;

e) Ink has been preset according to subject;

f) Water/register has been preset;

g) Web tension preset;

h) Inking couples washed and pre-inked, coloured inks not over-inked;

j) Test form with proofing control strips;

k) Offset-process consumables as per recommendations; and

m) Standardised plate production.

The ink/water balance, colour register, cut-off compensator and web tension are adjusted according to the specified parameters of the seller during make ready process. Once the initial press proofing completes then press should reach to production speed in a continuous acceleration process.

3 QUALITY ASSESSMENT

3.1 Requirement for an Objective Quality Assessment

a) Test form is to be used to formulate, define and check the quality parameters.

b) To verify the technical function of the press, the seller and the purchaser will agree on the important influencing factors such as blankets, printing inks, plates, paper grade and densitometer. These must be suitable, commercially available and process-suitable.

c) The ink densities, dot gains and all other directly dependent parameters are determined densitometrically with suitable and calibrated measuring equipment according to the test procedure specified by Seller.

3.1.1 *Production Start Criteria for Saleable Copies*

The agreed tolerances must apply to 90 percent of the evaluated test copies (from production run).

3.1.2 *Acceptance Test Criteria*

a) The agreed tolerances must apply to 95 percent of the evaluated test copies (measuring points).

b) The criteria are measured using a test form. The acceptance criteria are defined in **5**.

3.2 Ink Densities (Solid Ink Densities)

All quality requirements are based on the solid ink density values specified in “normal inking” (100 percent area coverage, D_v).

If normal inking values have not been specified, the following values can be used as an alternative:

a) Black — $D_V = 1.10$ +/– 0.1

b) Cyan — $D_V = 0.90$ +/– 0.1

c) Magenta — $D_V = 0.90$ +/– 0.1

d) Yellow — $D_V = 0.90$ +/– 0.1

These values refer to newsprint target quality, 40*– 48 g/m² (* Provided that absorbency of the paper is satisfactory).

4 PARAMETERS FOR WEB OFFSET PRESS ACCEPTANCE TEST CRITERIA FOR TARGET QUALITY

Target quality represents the obtainable product quality. Products in “target quality” are within the following defined tolerances.

4.1 Ink Density Profile and Production Run Stability

a) When started in right operational conditions (including temperature), the densities obtained through the ink presetting values from RIP/scanner, should not exceed a tolerance of $\Delta D_v = \pm 0.14$ D, plus measuring instrument tolerance and density tolerance in the paper, over the web width in an axial direction.

b) When started with manual setting conditions, the densities set by the operating personnel should not exceed a tolerance of $\Delta D_v = \pm 0.20$, plus measuring instrument tolerance and density tolerance in the paper, over the web width in an axial direction.

c) At the same measuring point measured ink densities may deviate from the measured initial value of the first copy without any external intervention by not more than $D_v = \pm 0.10$ at a constant and also maximum production speed over a period of at least 10 min within one reel.

4.1.1 *Characteristic of the Ink Densities When there are Changes in the Speed*

a) The acceleration curves of the inking and dampening units have been set to retain the ink/water balance when the press accelerates from proofing speed to the max print speed.

b) Changes to the solid ink density, at speed changes from 60 percent to 100 percent of the max. print speed measured at the same point, of max. $D_v = \pm 0.15$ are permitted.

4.2 Dot Gain

The dot gain describes the effect of the dot increase from the paste-up to the impression.

The dot gain is affected by the parameters like plate exposure, paper quality, ink film thickness (solid ink density), ink viscosity, ink temperature, pressure of the plate cylinder on the blanket cylinder, pressure of the blanket cylinder on the web, blanket type, water supply, colour sequence.

As the influencing factors on the dot gain are not all press-related, the dot gain is excluded from the press-related quality parameters.

4.3 Gradual Fading in the Direction of Printing

Changes to the ink density in the circumferential direction are caused exclusively by a variable blanket adjustment around the circumference and are therefore not press-related.

4.4 Ghosting/Starvation

4.4.1 *Ghosting*

Ghosting is specified by measuring the density of the vertical solid ink rail and within the ghosting area. The maximum density difference between the two points is 0.2 D.

4.4.2 *Starvation*

Densities are measured on the horizontal solid ink rail under the vertical solid ink rail and at a point next to the rail. The values of the first measurement are subtracted from the values of the second measurement. The maximum density difference is 0.2 D.

4.5 Slurring and Doubling

No slurring or doubling can be seen with the naked eye.

4.6 Smearing/Offsetting

Press-related smearing does not occur if suitable paper and inks are used. Draw elements must run in the print-free area of the webs, otherwise, smear-free printing is not possible. This normally also applies to tape guides in the folder if tape guides are clean.

An unavoidable marking of the jaws in the case of solid areas and unfavourable subjects is tolerated.

4.7 Colour Register

The accuracy of the colour register is determined with suitable measuring instruments.

a) The maximum differential of the colour register is at a constant press speed, measured in the middle area of the web, within one reel (without register control system):

1)	Circumferential register within the H printing unit:	± 0.07 mm
2)	Circumferential register from H printing unit to H printing unit:	± 0.08 mm
3)	Circumferential register within the 8-couple tower:	± 0.15 mm
4)	Lateral register within the 8-couple tower:	± 0.12 mm

b) The maximum difference of the colour register is at speed changes ranging from 60 percent to 100 percent of the maximum production speed according to the performance graph, measured in the middle area of the web, within one reel (without register control system):

1)	Circumferential register within the H printing unit:	± 0.10 mm
2)	Circumferential register from H printing unit to H printing unit:	± 0.20 mm
3)	Circumferential register within the 8-couple tower:	± 0.30 mm
4)	Lateral register within the 8-couple tower:	± 0.12 mm

4.8 Folder Performance Test

4.8.1 *Tolerances for the Fold*

a)	Former fold/cylinder fold (first cross fold)	± 2.0 mm
b)	Condition: There is no cut-off register variation	
c)	Up to 24 pages broadsheet/48 pages tabloid	± 2.0 mm

4.9 Cut-off Compensator

4.9.1 *At Constant Speed* **(**with and without register control system) ± 2.0 mm

4.9.2 *At Speed Changes* **(**without register control system)

a) Up to 3 webs:	± 5.0 mm
b) For each subsequent web:	± 1.5 mm

4.10 Lateral Web Offset

The maximum lateral web offset is without the use of web edge control from the delivery of the last printing unit to the former entry:

At constant speed:	± 1.0 mm
With speed changes:	± 2.0 mm

5 PARAMETERS FOR "SALEABLE COPY QUALITY

The term "saleable copy quality" is used to determine the waste.

Products in the "saleable quality" are within tolerances defined under "target quality" except following deviations.

5.1 Ink Density Profile

The densities set by the operating personnel should not exceed a tolerance of $\Delta D_v = \pm 0.20$ over the web width in an axial direction.

5.2 Colour Register

The maximum differential of the colour register is at a constant press speed, measured in the middle area of the web, within one reel:

a) Circumferential register within the H printing unit:	± 0.10 mm
b) Circumferential register from H printing unit to H printing unit:	± 0.15 mm
c) Circumferential register within the 8-couple tower:	± 0.18 mm
d) Lateral register within the 8-couple tower:	± 0.15 mm

6 PRODUCTION SPEED

The maximum production speed of the press is as per the manufacturer's product specification.

The effective production speed depends on the operator's skill, maintenance practices, settings of the press, the number of pages of the product, the section lead, the type of fold, the quality and combination of the utilised materials as well as the environmental conditions.

Provided that operating and maintenance regulations are observed, that suitable commercially available and process-suitable materials are used, that the ambient temperature is between 20 °C and 22 °C and that the relative air humidity is between 40 percent and 60 percent.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Printing Machinery Sectional Committee, MED 25

Organization	*Representative(s)*
Former Director, Directorate of Printing, New Delhi	Shri A. K. Bansal (***Chairman***)
All India Federation of Master Printers, New Delhi	Shri Harjinder Singh President AIFMP (*Alternate*)
Autoprint Machinery Manufacturers Private Limited, Coimbatore	Shri K. G. Suresh Shri P. S. Balasubramanian (*Alternate*)
Department of Printing Technology, Haryana	Prof Anjan Kumar Shri Ankit Boora (*Alternate*) Shri Bijender (*Young Professional*)
Government of Karnataka Department of Printing Stationery and Publication, Bengaluru	Shri Ravishankar
Indian Printing Packaging and Allied Machinery Manufacturers Association, Noida	Shri S. Dayakar Reddy Shri Prashant Vats (*Alternate*)
Karnataka State Printer Association, Bengaluru	Shri T. V. Mukund Shri B. L. Srinivasa (*Alternate*)
Manugraph India Limited, Kolhapur	Shri Mahesh Madhukar
Office of Development Commissioner (MSME), New Delhi	Shri Umesh Shukla Shri K. Singh Sodhi (*Alternate*)
Savitribai Phule University, Ganeshkhind, Pune	Dr Dattatraya Kute
TechNova Imaging Systems India Private Limited, Mumbai	Shri Iyer Murali Krishnan Shri Shiva Subramanian (*Alternate*)
The Printers House Private Limited, Ballabhgarh	Shri S. K. Dixit Shri D. P. Dabas (*Alternate*)
In Personal Capacity (*A-302, Srabasti Cooperative Housing Society Limited, B-13 Sammilani Park, Kolkata 700 075*)	Shri Diptendu Chowdhury
BIS Directorate General	Shri Rajneesh Khosla, Scientist 'E' and Head (MED) [Representing Director General (*Ex-officio*)]

Member Secretary

Shri Lokraj Meena
Scientist 'B' (MED), BIS

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